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Intimate partner violence under forced cohabitation and economic stress: Evidence from the COVID-19 pandemic



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ABSTRACT

With the COVID-19 outbreak imposing stay at home and social distancing policies, warnings about the impact of lockdown and its economic consequences on domestic violence have surged. This paper disentangles the effect of forced cohabitation and economic stress on intimate partner violence. Using an online survey data set, we find a 23% increase of intimate partner violence during the lockdown. Our results indicate that the impact of economic consequences is twice as large as the impact of lockdown. We also find large but statistically imprecise estimates of a large increase of domestic violence when the relative position of the man worsens, especially in contexts where that position was already being threatened. We view our results as consistent with the male backlash and emotional cue effects.

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1. Introduction

As the spread of Covid-19 was taking place, people around the world were told to stay at home for their safety and everyone else's. But for many individuals being at home may not be a safe option. Few weeks after lockdowns started, dramatic increases in the calls to gender-based hotlines began to be reported in many countries, raising concerns about the possible surge of domestic violence.¹

However, and despite mounting initial evidence, existing theories of domestic violence yield ambiguous predictions about the effects of a lockdown.² Consistent with violence as expressive

behaviour (Tauchen et al., 1991), a lockdown may increase intimate partner violence (IPV hereafter) due to an exposure effect (more time together) or due to an emotional cue if it is unexpected (Card and Dahl, 2011). By contrast, a lockdown may curtail violence if it is used as an instrument for controlling behaviour (Gelles, 1974; Dobash and Dobash, 1979) as forced cohabitation reduces the need to use violence to control a partner's behaviour.

To further complicate matters, forced cohabitation came together with an economic shutdown, triggering additional factors of stress within households. That economic stress can have opposite effects on IPV depending on who (the woman or her partner) is more affected by the shock, with different theories again yielding different predictions. Bargaining models predicts an increase (decrease) of domestic violence against women if the relative position of the woman (man) worsens (Aizer, 2010; Anderberg et al., 2016). A central element of these theories is the credibility of the threat of ending an abusive relationship if the husband's ability for compensating transfers decreases. But this may not be the case under a general lockdown, where the outside opportunities of women decrease even if the man is more adversely affected by the pandemic. Contrary to the bargaining models, the male backlash

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¹ <https://www.unwomen.org/en/news/stories/2020/4/statement-ed-phumzile-violence-against-women-during-pandemic>.

² This paper focuses on intimate partner violence against women. While the term 'domestic violence' also includes violence between other individuals within households, we use partner violence and domestic violence interchangeably.

theory predicts an increase of violence if the man's relative position worsens, as this feeds his fears of losing the dominant position within the couple (Macmillan and Gartner, 1999).

The main contribution of this paper is to help disentangle the effect of forced cohabitation and economic stress on IPV against women.³ Understanding the role of each mechanism is crucial in order to develop any response to mitigate their impact and reduce its long-run effects.

A growing body of research on the Covid-19 pandemic has estimated the effect of the coronavirus outbreak on violence against women and children (see Peterman et al., 2020 for a summary). The results are inconclusive, with some papers suggesting an increase, others showing mix results, and others suggesting no change or even a decrease of domestic violence.⁴ Most of these studies rely on time series analyses of reported crime or service call data.⁵ A limitation of these data sets is that they are based on reported events, but it is well-known that domestic violence suffers from an important misreporting problem, which may be exacerbated during a lockdown if women, justifiably or not, perceive a lack of access to support services in the health, police and justice departments. Besides, service call data usually includes calls for other reasons (legal or psychological counselling, issues related to the children visitation rights of parents during the lockdown), which may be difficult to separate from calls reporting a domestic violence event. Most importantly, aggregate data makes it difficult to identify the main mechanisms through which domestic violence was affected by the coronavirus outbreak, namely, the lockdown and the economic stress.

In this paper we attempt to overcome some of the limitations of the previous studies. To do this, we use individual level data from an ad-hoc online survey to more than 13,000 Spanish women, in which we asked them about situations typically related to IPV. By including both reported and non-reported cases, this data allows us to get reliable estimates of changes in the prevalence of IPV during the lockdown. Because we collect information about the mobility and the employment status of each member of the couple before and during the lockdown, we are able to identify the main mechanisms through which the covid-19 pandemic affects IPV, that is the lockdown and the economic stress.⁶

The Spanish case offers an exceptional context in which it is possible to isolate the effect of the lockdown from the economic stress caused by the pandemic. Crucial to our study is the fact that Spain was one of the first countries to impose restrictions on mobility, and these restrictions were the strictest in Europe and affected citizens by surprise. Specifically, a national quarantine

was imposed on the 15th of March. All non-essential businesses and shops were closed and the physical presence at work was limited to essential activities that could not be done from home.⁷ The national quarantine represented a drastic and unexpected change in the everyday life of millions of people. It occurred just a few days after it was imposed in Italy (9th March) and just a few days after mass demonstrations throughout the country to celebrate Women's Day. Compared to Italy, the first European country with extreme lockdown measures, Spaniards were not allowed to exercise outdoors or go for a walk for seven weeks. In addition, only one person per household could go out to do grocery shopping. The national quarantine has come along with a national economic crisis. The GDP dropped 17.8% in the second quarter respect to the previous quarter, and it was the highest drop in the Eurozone.⁸ According to most predictions, Spain's GDP will decrease this year between nine and thirteen percent, with unemployment figures rising rapidly as the devastating effects of the economic crisis threaten the survival of businesses. However, the quarantine and the economic crisis has affected individuals differently, depending on the possibilities to work from home and whether their activity was considered essential and/or subject to physical contact. This different exposure to the external and exogenous shock what constitutes our main source of identification for the analysis.

We estimate a model where the dependent variable takes the value one if the woman has suffered some type of IPV during the lockdown on a set of variables about mobility of each member of the couple (whether only the man, the woman or both were locked), and a set of variables about the economic stress of each member of the couple (whether the Covid-19 pandemic affected the employment status and/or employment perspectives of only the man, the woman or both). We control for observable characteristics of the woman and her partner as well as for the lagged recall-based IPV. By controlling for past IPV, we reduce potential biases that could arise if either the lockdown variables or the economic stress variables were correlated with unobservable individual characteristics also correlated with the incidence of IPV. Additionally, as we will show later, our results are robust to alternative specifications and ways to account for potential bias due to unobservable characteristics correlated with IPV and the likelihood to be affected by the Covid-19 pandemic.

We find that during the quarantine, IPV increased significantly by 4.5 percentage points (pp, hereafter), equivalent to an increase of 23.38% relative to the pre-lockdown average, which is driven by an increase of the sexual and psychological types of abuses. Instead, we find no effect on the level of physical violence. Our findings indicate that both the lockdown and the economic stress cause an independent from each other and significant increase in the level of IPV, with the largest effects occurring when both members of the couple are locked together (14–16%) and when both suffer from economic stress (25–33%). The increase in domestic violence is higher among couples with children, couples without previous positive levels of violence and for low educated women. We also find large but statistically imprecise estimates of a large increase of domestic violence when the relative position of the man worsens, especially in contexts where that position was already being threatened. We view our results as consistent with the male backlash and emotional cue effects.

³ We focus on violence against women within heterosexual couples because this demographic group is the most affected by domestic violence according to previous statistics. However, the Covid-19 pandemic may also have affected violence against men and violence within homosexual couples, something that would be interesting to explore by future studies.

⁴ Beland et al. (2020) for Canada, Leslie and Wilson (2020) and Mohler et al. (2020) for US, and Rashid et al. (2020) for Bangladesh find an increase in domestic violence. Silverio-Murillo and Balmori de la Miyar (2020) for México find mix results. Campedelli et al. (2020) for US, Payne et al. (2020) for Australia and Gerell et al. (2020) find no change or even a decrease of domestic violence.

⁵ The only exceptions are Beland et al. (2020) for Canada and Rashid et al. (2020) for Bangladesh, which use primary data. However, Beland et al. (2020) measure IPV through an indirect question asking whether the individual is worried about domestic violence, while Rashid et al. (2020) is a qualitative research based on 51 in-depth telephone interviews focused on vulnerable groups.

⁶ There could be other factors besides the lockdown and economic uncertainty explaining the change of IPV during the pandemic. For example, health concerns and having to work under pressure in some specific occupations (health services, supermarkets) could have triggered additional stress. Although we cannot control for these factors, they are likely negatively correlated with our variables of interest (fears to be infected would be higher among those who have to work in essential activities) and therefore if anything, their omission should introduce a downward bias in our estimates.

⁷ For example, according to Google Covid-19 Mobility Reports, during the seven weeks of the lockdown in Spain, the mobility dropped, on average, 88% in retail and recreation, 80% in transit stations and 66% in workplaces. The same figures during the lockdowns in France and Germany were 81% and 57% in retail and recreation, 78% and 53% in transit stations and 63% and 42% in workplaces, respectively.

⁸ Source: Eurostat (ec.europa.eu/eurostat/statistics-explained/index.php?title=File:GDP_and_employment_growth_rates_%25_change_over_the_previous_quarter,_base_d_on_seasonally_adjusted_data,_2020Q02.png).

In addition to the growing literature addressing the effect of the Covid-19 pandemic on domestic violence, this paper contributes to the literature that analyses the impact of general and relative changes on the economic conditions on domestic violence. The empirical literature is inconclusive both on the overall effects of economic recessions on IPV and on how relative changes in the economic conditions of women and men affect domestic violence. While [Anderberg et al. \(2016\)](#) for UK and [Beland et al. \(2020\)](#) for a group of 31 developing countries find no effect of a general increase in unemployment rate on IPV, [Schneider et al. \(2016\)](#) find that the Great Recession in the U.S. was associated with an increase in men's abusive behaviour. Regarding the effect of improvements on women's relative economic conditions respect to those of men, while some studies report a reduction in IPV consistent with bargaining models ([Aizer, 2010](#), [Anderberg et al., 2016](#)), others find an increase in IPV consistent with male-backlash theories ([Bhalotra et al., 2020](#), [Alonso-Borrego and Carrasco, 2017](#)). This study contributes to this literature by adding evidence of an increase of IPV as consequence of an economic shock: the larger effects on IPV appears when both men and women are under economic stress. It also adds some evidence consistent with the male-backlash theory. By analysing the short-term effects of a sudden exogenous shock, we reduce concerns about endogeneity and potential reverse causality problems.

This paper also contributes to the literature analysing the effects of natural disasters on IPV. Indeed, the current pandemic crisis shares some characteristics with natural disasters, as it produced expected shifts in daily routines, closed schools and decreased available resources. This literature finds an increase on IPV during natural disasters (see for example [Catarino et al., 2015](#); [Campbell, 2020](#)). This paper adds to this literature by isolating the effect of the economic stress from other channels through which a pandemic or a natural disaster may affect IPV.

2. Data

2.1. Online survey on intimate partner violence

To overcome the limitations of the available statistics and contribute to a better understanding of a phenomenon of such social importance, we have carried out an online survey and asked Spanish women about the relationship with their partner during confinement. This survey provides unique data on domestic violence episodes, reported or unreported to the police, on a national sample of 13,786 women in Spain. The survey contains two parts. In the first part, women aged 18 years and older were asked questions about their economic situation before and after the lockdown, in addition to other demographic characteristics. In the second part, the same women responded to questions about different situations that according to experts are strong indicators of mistreatment ([Alberdi and Matas, 2002](#)). This set of questions allows us to construct a measure of "technical abuse". We included nine different situations, that were obtained from a larger set of situations in the last Survey on Violence Against Women in Spain.⁹ We ask whether any of those situations has occurred with the current partner before and during the lockdown and the frequency of occurrence. We define our main variable of interest, technical abuse, as a dummy variable that takes value 1 if any of these 9 indicators occurs "frequently" or "sometimes".¹⁰

The survey was carried out between May 17th and June 12th and was distributed only by Facebook through a page created for

this purpose (independent of our contact list) and through the tool "boost post".¹¹ This tool allows to distribute a publication randomly among Facebook users, establishing a target audience; in our case, women between 18 and 60 years old residing in Spain. Although the distribution of the survey is random, women can decide to participate or not after seeing the ad in her Facebook wall. Following the suggested protocols for conducting IPV surveys, it was boosted as a survey about the effects of the lockdown on women and their relationships, and not about domestic violence.¹²

The way that Facebook boost tool works is the following: you have to set the target audience, assign a budget to spend in the campaign and the campaign duration. Based on these three parameters, a post participates in daily auctions to appear on the News Feeds of the targeted audience. The campaign ends either when the duration is reached, or the budget is over. We set a duration of 4 weeks, but the budget was over 2 days earlier, resulting in 13,786 complete responses. Due to voluntary participation (we did not offer any incentive to complete the survey) and the primary selection of Facebook users, the survey is not necessarily representative of the target population. Even though, the sample obtained presents a distribution by women's characteristics very similar to that of the general population (see Appendix [Table A.2](#)). For example, according to the Spanish Labour Force Survey (a representative survey of the Spanish population), in the first quarter of 2020 the share of women aged between 18 and 60 with a college degree or more is 40% versus 39% in our sample. The share of women married is 49% versus 46% in our sample, and the proportion of women with children is 59% versus 56% in our sample. Yet, we reweighted our data on education, age and province of residence to ensure that our statistics are representative of the Spanish women population aged between 18 and 60.¹³ This reweighting has no impact on the results.

Another concern with online surveys is the risk of attrition. Appendix [Fig. A2](#) plots the cumulative distribution function of women who did not finish the survey by question. As can be seen, among those who leave the survey, 80% do so before reaching the first question about domestic violence. The main drop, 49%, is seen in question 3, which asks the zip code. The second main drop happens in question 9 which asks about household composition, while only 1% of women drop the survey in the first question about IPV. Overall, this evidence is reassuring and minimizes our concerns about the representativeness of our survey due to selection of women based on their experience with domestic violence and their willingness to answer questions of that type.¹⁴

From the original 13,786 completed answers, 16.7% had invalid responses to one or more questions.¹⁵ After eliminating those cases, we further restricted the sample to women who were cohabiting with a male partner (78%), resulting in our final sample of 8,951

¹¹ We decided to promote the survey through Facebook because it is the most used social network in Spain. In May 2020, there were 29,440,000 Facebook users in Spain which accounted for the 63.1% percent of the population. 52.3% were women. See <https://napoleoncat.com/stats/facebook-users-in-spain/2020/05>.

¹² Appendix [Fig. A.1](#) shows the screen shots of the Project's Facebook page and the boosted post.

¹³ Spain has 52 provinces.

¹⁴ To further explore potential sample selection, we have checked whether the characteristics of the women who leave the sample in a given question correlates with the predictors of having suffered IPV and we find no evidence of that (the results of this analysis are available from authors upon request).

¹⁵ Invalid responses include cases where the respondent was a man (even though the survey targeted women, we asked the gender to make sure it was women who were responding to the survey. When the indicated gender was male the survey ended with that question) or when the zip code, which was entered manually, was wrong.

⁹ See Appendix [Table A.1](#) for a description of each situation and the associated type of IPV.

¹⁰ We follow the same criteria established by the Spanish Women's Institute and previously use in the literature (see for example, [Brassiolo \(2016\)](#)).

observations.¹⁶ On average, 19% of women in our sample had experienced some type of abuse from the intimate-partner before the lockdown.¹⁷

3. Effects on non-extreme violence

3.1. Empirical approach

To assess how the current pandemic affect non-extreme IPV, we estimate the following equation using a probit model over a sample of women aged between 18 and 60 and, who have and live with a male partner:¹⁸

$$\begin{aligned}
 IPV_{during\ lockdown}_{i,p,d} = & \alpha + \beta_1 ManL_{i,p,d} + \beta_2 WomanL_{i,p,d} \\
 & + \beta_3 BothL_{i,p,d} + \beta_4 ManES_{i,p,d} \\
 & + \beta_5 WomanES_{i,p,d} + \beta_6 BothES_{i,p,d} \\
 & + \varphi IPV\ Before\ Lockdown_{i,p,d} + X'_{i,d} \mu_1 \\
 & + Z'_{i,d} \mu_2 + \gamma_p + \theta_d + \varepsilon_{ipd}
 \end{aligned}$$

where *IPV during lockdown* is a dummy variable that indicates if woman *i*, who lives in province *p* and answered the survey at the date *d* has suffered IPV from her intimate-partner during the lockdown. *ManL*, *WomanL*, and *BothL* are dummies variables capturing which member of the couple is locked at home, taking the value 1 when *only* the partner, *only* the woman or both are locked at home, respectively. Locked at home is defined as to be working from home (teleworking) or not working. Note that due to the strict mobility restrictions, all individuals not working during the quarantine were de facto locked in their homes. *ManES*, *WomanES*, and *BothES* indicates which member of the couple was negatively affected by the economic shock. *ManES*, *WomanES* and *BothES* take value 1 when *only* the partner, *only* the woman or both are economically stressed.¹⁹ We define economic stress when the individual has either lost the job or clients (if self-employed) due to COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff.²⁰ Importantly, *IPV Before Lockdown* is a variable indicating the level of IPV suffered by woman *i* before the lockdown. By controlling for it, we reduce potential biases that could arise if either the lockdown variables or the economic stress variables were correlated with unobservable individual characteristics also correlated with the incidence of IPV. In any case, since our measure for IPV before lockdown is recall-based, we cannot rule out a recall bias.²¹ In the robustness section, we show that

¹⁶ The reason for leaving women without a cohabiting partner out of the analysis is that we wanted to focus on those situations where a lockdown might have a more direct impact. Those cases were also the ones that attracted most of the attention by the media as fears of an increase of IPV grew. We recognize that by doing this we might be overestimating the increase of IPV during the lockdown, as the degree of violence between couples that do not cohabit probably decreased due to the lack of physical contact.

¹⁷ According to the 2019 Spanish Survey Against Women - whose broad sample makes it one of the most accurate portraits of the situation in Spain - 14.7% of women aged 16 and over have suffered some type of violence from their current partner. Other estimates indicates an IPV of around 20% for this group of woman (see the 2012 FRA EU-wide survey of Violence against women and Ruiz-Pérez et al., 2017).

¹⁸ In the robustness section we show that the results are robust to estimate this equation using linear probability models.

¹⁹ See Table A3 for a detailed description of each variable.

²⁰ Temporary layoffs (ERTE, in Spanish law) have been very frequently used by firms during the pandemic thanks to regulatory changes.

²¹ According to the literature, traumatic experiences are difficult to forget (Catarino et al., 2015). In fact, the literature suggests that the experience of some type of domestic abuse increases the strength of autobiographic memories (x. In this regard, our measure would be more precise than those recorded by formal reporting systems. First, we are interested in capturing violent episodes with the same partner, and this should not have happened a long time ago. Second, we are able to capture events that have not been reported yet. Indeed, according to the last Spanish Survey on Violence Against Women, it is take on average 8 years until a victim decided to report a violent episode.

our results are robust to alternative specifications to account for past IPV. The vector *X* includes a range of individual characteristics known to influence IPV, such as age, marital status, presence of children younger than 18 years old in the household, household income, foreign-born status, education level, number of years with the current partner and employment status. In addition, the vector *Z* includes woman's partner characteristics, such as education and immigration origin. We also include province fixed effects (γ_p) to control for unobserved time-invariant province characteristics, as well as date-of-survey fixed effects, to take into account that answers can be affected by the distance of that date from the beginning/end of the lockdown. Observations are weighted by the women population in the (province, age, education) cell.²²

3.2. Results

We start by looking in Table 1 at the unadjusted change (raw estimates) of the level of IPV during the lockdown. This descriptive analysis provides a first picture of the effects of the lockdown and economic stress on the different types of violence (physical, sexual and psychological). Column 1 in Panel A shows the percentage points change (marginal effects) in the level of IPV for couples where at least one of the members is locked or under economic stress (94.16% of the sample). We observe a significant 4.5 pp increase of the general level of IPV (a 23.38% of the pre-lockdown average, which is 19.24), which is driven by an increase of the sexual and psychological types of abuses (1.2 and 5.5 pp, respectively). In contrast, we find no effect on the level of physical violence. In Panels B and C we split the general effect into two components: the lockdown (Panel B) and the economic stress (Panel C). We see that when at least one of the members of the couple is locked, the level of IPV increases by 2.4 pp (12%), while the economic stress of a member of the couple raises the level of violence by 3.0 pp (15%). Once again, the effects are driven by the increases in the sexual and psychological abuse.

In Table 2 we show the estimates of our main empirical specification, where we identify separately the effects of the lockdown and the economic stress of each member of the couple. Columns (1), (2), and (3) add controls progressively. The specification in column (3) has controls for the level of IPV before the lockdown, age dummies, date dummies, controls for the level of education of each member of the couple, the marital status of the woman, country of origin, number of years that the couple has been together, the level of income of the household, the employment status before and during the lockdown of each member of the couple and province fixed effects. The little effect on the results of adding controls is not surprising considering that we control for the level of violence before the lockdown.²³ Column (4) restricts the sample to couples with no previous violence, whereas column (5) is restricted to couples with previous levels of violence. Finally, columns (6) to (9) show the effects by type of violence.

The first result from Table 2 is that the largest effects are found when both members of the couple are locked together and when both suffer from economic stress. The level of IPV increases between 2.8 and 3.1 pp (between 14% and 16%) when both members of the couple are locked. The effect is statistically significant in columns (1) and (2) but not in column (3). The economic stress of

²² Results are robust to unweighted estimation.

²³ Controlling for past IPV is important. When we do not control for past IPV, the estimated effects are larger compared to the specifications that controls for past IPV. This is because the incidence of IPV pre-lockdown is higher among couples with any of its members either locked or economically stressed compared to the rest of couples. Not accounting for this artificially increases the estimated effects of the pandemic.

Table 1
The impact of the lockdown and economic stress on non-extreme violence. Raw estimates.

	All types (1)	Physical (2)	Sexual (3)	Psychological (4)
A. At least one member of the couple either locked or economically stressed	0.045** (0.020)	-0.004 (0.006)	0.012* (0.006)	0.055*** (0.018)
B. At least one member of the couple locked	0.024* (0.014)	-0.002 (0.004)	-0.001 (0.005)	0.034** (0.015)
C. At least one member of the couple economically stressed	0.030*** (0.010)	0.002 (0.003)	0.007** (0.003)	0.042*** (0.010)
N. Obs	8,951	8,951	8,951	8,951
Pre-lockdown IPV	0.192	0.040	0.026	0.185
Age and date controls	No	No	No	No
Demographics and empl. status	No	No	No	No
Province fixed effects	No	No	No	No

Notes: The table displays the coefficients of probit regressions where the dependent variable is a binary variable indicating whether the woman was subject to abuse (the variable takes value 1 if the woman answers “sometimes” or “often” to any of 9 possible situations of abuse). In addition to the indicators variables detailed in Panels A, B and C respectively, all the models control for the level of abuse before the lockdown. The mean pre-lockdown IPV measures for each group are the following: 0.192 when at least one member of the couple is either locked or economically stressed (Panel A); 0.192 when at least one member of the couple is locked (Panel B); 0.20 when at least one member of the couples is economically stressed (Panel C); and 0.145 when no member of the couple is locked or economically stressed (omitted category). Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: online survey.

Table 2
The impact of the lockdown on non-extreme violence.

	All types of abuse			With versus without previous exposure to IPV		Physical or sexual		Psychological	
	(1)	(2)	(3)	No previous exposure (IPV before = 0) (4)	With previous exposure (IPV before = 1) (5)	(6)	(7)	(8)	(9)
Man only locked	0.024 (0.022)	0.027 (0.023)	0.026 (0.022)	0.018 (0.013)	0.019 (0.050)	-0.004 (0.007)	-0.003 (0.006)	0.043* (0.022)	0.041* (0.022)
Woman only locked	0.014 (0.016)	0.009 (0.017)	0.009 (0.016)	0.003 (0.010)	0.003 (0.038)	-0.008 (0.005)	-0.008 (0.005)	0.018 (0.016)	0.017 (0.016)
Both locked	0.031** (0.016)	0.032* (0.017)	0.028 (0.017)	0.010 (0.010)	0.052 (0.041)	-0.005 (0.005)	-0.006 (0.005)	0.040** (0.016)	0.035** (0.016)
Man only economic stress	0.025* (0.014)	0.022 (0.016)	0.022 (0.015)	0.008 (0.009)	0.047 (0.034)	0.011* (0.006)	0.011** (0.006)	0.022 (0.015)	0.022 (0.015)
Woman only economic stress	-0.004 (0.015)	0.011 (0.017)	0.013 (0.017)	0.015 (0.010)	-0.012 (0.039)	0.003 (0.006)	0.004 (0.006)	0.017 (0.017)	0.019 (0.017)
Both economic stress	0.048*** (0.014)	0.063*** (0.019)	0.064*** (0.018)	0.037*** (0.011)	0.067* (0.036)	0.012* (0.006)	0.014** (0.006)	0.061*** (0.018)	0.061*** (0.018)
N. obs	8,950	8,950	8,950	7,144	1,652	8,950	8,950	8,950	8,950
Pre-lockdown IPV	0.192	0.192	0.192	0	1	0.056	0.056	0.185	0.185
Age and date controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
demographics and empl. Status	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	No	No	Yes	Yes	Yes	No	Yes	No	Yes

Notes: The table displays the coefficients of the independent variable of interest in equation 1, expressed as percentage points difference from the value of the dependent variable before the lockdown. The dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers “sometimes” or “often” to any of 9 possible situations of abuse. All models control for the level of abuse before the lockdown. The sample includes all women who declare to live with a male partner and who are 60 or younger at the time of the interview. Column (1) only control for age and date controls, Column (2) adds demographic and employment status controls, and column (3) includes also province fixed effects. Column (4) is restricted to couples with no previous violence. Column (5) is restricted to couples with previous levels of violence. Columns (6) and (7), and (8) and (9) shows the results of estimating the same equations than in columns (2) and (3) for Physical or sexual and for Psychological abuse respectively. Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the covid pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: online survey.

the couple also increases IPV, between 4.8 and 6.4 pp (25–33%), statistically significant at the 1% level in all three specifications.²⁴

²⁵ In columns (4) and (5) we see larger increase in violence for couples with previous levels of violence. Whereas the economic stress (lockdown) of the couple increases the level of IPV by 3.7 pp (1.0 pp) in the case of couples without previous violence, it raises

IPV by 6.7 pp (5.2 pp) for couples with previous positive levels of violence. As we will see in the robustness tests section, the results for couples without previous exposure to violence are robust to various specification changes, but those of couples with previous IPV are not.²⁶

²⁴ We cannot reject that the effect of both being locked is the same than the effect of both members of the couple under economic stress.

²⁵ Columns 1 and 2 in appendix Table A.8 show that this effect is robust to splitting the economic stress indicator into two components, one that captures the economic stress from having lost the job and the other one that identifies economic stress because of the fear of losing the job.

²⁶ In Appendix Table A.7 we show the results by each of the outcomes of Table 1 in order to assess which measure of abuse is driving the patterns observed in Table 2. The table shows that all types of abuse increase when both members of the couple are economically stressed and had not been exposed to IPV in the past. In general, the physical and sexual types of abuse increase due to economic stress but not due to the lockdown, whereas the psychological abuse increases in more situations, i.e., when the couple is economically stressed but also when it is locked.

Columns (6) to (9) in the table distinguish between different types of violence: physical-sexual and psychological. The effect of the lockdown on IPV is driven by the increase of the psychological abuse (between 3.5 and 4.0 pp, or 19–22%), with no effect on the physical-sexual one. Instead, the economic stress of the couple raises significantly both types: 1.2–1.4 pp (21–24%) in the case of the physical-sexual abuse and 6.1 pp (33%) in the case of the psychological one.^{27,28} As shown in Appendix Table A.7., within the physical-sexual type of violence, the rise is driven by sexual violence with no increase in physical violence. To further explore this result, we have looked at the trend of female homicides during the lockdown. The results of an event study (shown in Appendix 2) suggest a negative effect on female homicides by intimate partners during the lockdown (weakly significant, at the 10% level). Although it is difficult to establish definite reasons for these different effects, it is reasonable to assume that a lockdown situation reduces the need to use severe violence to exert control over a victim's actions. It could also be that with the lockdown, the probability to be caught and convicted is higher (it will be easier to identify the perpetrator of violence since both are in the same space) which could serve as a deterrent.

Another interesting result which arises from Columns (6) to (9) of Table 2 is that we only find significant effects when either both members of the couple are locked or suffering economic stress, or when only the man is locked or under economic stress. These results are consistent with an emotional cue effect augmented by a male backlash effect. Put differently, if only a male backlash effect was taking place, we should not observe an increase of IPV when both members of the couple are locked or economically stressed.

The results in Table 2 run contrary to the hypotheses of the bargaining models of IPV, which predict that an improvement of the relative position of the woman reduces the level of violence. Recall that those models rely on the exit-threat effect, that is, a woman whose relative position has improved can credibly threaten to abandon a violent relationship and this threat will reduce the level of IPV. As discussed, the fact that we are looking at the short run effect of the pandemic and the fact that the lockdown might have reduced the outside options of victims even when the economic situation of their partner has worsened, could be behind the lack of evidence of an exit-threat effect in our data.

To test the relevance of the male-backlash effect, we check in Table 3 the effect of a man-only economic-stress situation across different groups in the data.²⁹ We perform three different analyses: in the first one, we split provinces in two groups, those with an above and a below average proportion of couples in which the man is the main source of income (*male breadwinner*); in the second analysis we split provinces according to the proportion of dual-earner couples; finally, in the third analysis we use the index by Tur-prats (2019) and split provinces in two groups according to the proportion of stem versus nuclear families. As noted in Macmillan and Gartner (1999), a deterioration of the relative position of the man may increase violence when the woman works, and the man feels that his dominant position is threatened. Although we cannot reject the two coefficients in each analysis being equal, the point estimates are suggestive of being consistent with the male backlash effect. That is, we find that the *ManES* coefficient is larger in

provinces with a relatively weaker position of men, i.e., provinces with a lower proportion of men acting as the breadwinner (5.0 vs 0.3 pp), with a higher proportion of dual-earner couples (2.7 vs 1.7 pp) and with more nuclear families (3.2 vs –0.2 pp).

We move now to the subgroup analysis of Table 4. The table shows the results of our main specification by presence of children younger than 18 in the household, by age and by the level of education of the woman. With respect to the lockdown, the effects are driven by households with children (3.6 pp) and with women aged 30 or less (5.5 pp) in which both members are locked. There is also a large effect when the man is the only one locked and his partner has less than a college degree (6.5 pp).

The pattern is less clear in the case of the effects of the economic stress. When both members of the couple are affected, the level of IPV increases more for women with children (7.1 pp versus 4.8 pp without children) and older than 30 (7.7 pp versus 0 pp in the case of women younger than 30). There are, however, no significant differences between high and low educated women, with IPV increasing 6 pp in each case. The increase in the level of violence when the man is the only one economically affected by the pandemic is driven by men with children and living with women older than 50 and of a lower level of education.

4. Robustness tests

Appendix Tables A5 and A6 test the robustness of our results to various specification changes. To facilitate the comparison with our previous results, Column (1) of Table A.5 shows the results of our main specification (column 3 in Table 2). Our results are robust to running a linear probability model instead of Probit (column 3). In column 2 of the table we see that combining the lockdown and economic stress status yields large and significant effects when either the man or both members of the couple are both locked and economically stressed. In the next columns we worry that our control for past IPV may be a noisy measure of the prevalence of IPV if, for example, there is recall bias. This could bias our results if the 'measurement' error is correlated with the strength of the shock and current IPV. We perform two types of tests. In columns 4 and 5 we show the results of adding additional controls for the intensity of past IPV, more precisely, we add an indicator of being subject to IPV 'often' in any of the nine types of abusive behaviour and a set of dummy indicators for the different types of lagged IPV, i.e. physical, sexual, or psychological. It is reassuring that the results in columns 4 and 5 are very similar to those in columns 1 and 3, respectively, suggesting that our lagged IPV measure does a good job at capturing both the prevalence and intensity of past domestic violence. In columns 6 to 11 we perform a different test. In those columns we constraint the coefficient of past IPV to 1. This is equivalent to a regression in which the dependent variable is the difference of IPV before and during the confinement. When we impose this restriction, the magnitude of the effects decreases and we lose significance (column 6), not so in the specification that combines the lockdown and economic stress status of the couple (column 7), were the effects continue to be large in magnitude and statistically significant. The pattern is the same when we use different indicators of IPV, such as the number of abusive behaviours (columns 8 and 9) or the existence of 'frequent' abusive behaviour (columns 10 and 11).³⁰ To further investigate this issue,

²⁷ The different effect of the two groups of couples (both locked or both under economic stress) is statistically significant for all types of violence.

²⁸ The effect on physical-sexual abuse is driven by the event of having lost the job or income (see columns 3 and 4 of Table A.8), while the effect on psychological abuse is driven by both the loss of the job and the fear of losing it (see columns 5 and 6 of Table A.8).

²⁹ The specification in Table 3 is the same as in Table 2. In Table 3 we focus on the coefficient of the man being economically stressed, because this is the coefficient with the closest link with the male backlash theory. A similar pattern is observed when comparing the coefficient of the man being locked.

³⁰ It is not clear whether 1 should be the true value of the coefficient of lagged IPV. In our unrestricted regressions, the coefficient of lagged IPV is around 0.75. This is consistent with the different time frames in our questionnaire. When we ask about lagged IPV we ask about abusive behaviour before the confinement, whereas when asked about current IPV, individuals respond based on the events of the past few weeks. In other words, abusive behaviour that occurred months ago may not perfectly predict abusive behaviour in each week.

Table 3
The impact of the lockdown on non-extreme violence. Analysis by type of province according to the relative position of the man in the couple.

	Male breadwinner		Dual earner couples		Stem vs. nuclear families	
	Provinces with % of male-breadwinner below average (1)	Provinces with % of male-breadwinner above average (2)	Provinces with % of dual-earner above average (3)	Provinces with % of dual-earner below average (4)	Provinces with % of stem below average (Nuclear) (5)	Provinces with % of stem above average (Stem) (6)
Man only locked	0.016 (0.040)	0.024 (0.028)	0.083*** (0.041)	-0.008 (0.027)	0.047* (0.030)	-0.001 (0.033)
Woman only locked	0.022 (0.032)	0.002 (0.019)	0.033 (0.025)	-0.018 (0.021)	0.007 (0.020)	0.012 (0.025)
Both locked	0.030 (0.030)	0.024 (0.020)	0.056** (0.024)	-0.016 (0.022)	0.037* (0.021)	0.010 (0.025)
Man only economic stress	0.050* (0.029)	0.003 (0.017)	0.027 (0.023)	0.017 (0.020)	0.032* (0.019)	-0.002 (0.023)
Woman only economic stress	0.010 (0.027)	0.012 (0.020)	0.020 (0.025)	0.010 (0.023)	0.012 (0.020)	0.012 (0.026)
Both economic stress	0.117*** (0.036)	0.030 (0.021)	0.078*** (0.029)	0.045* (0.026)	0.074*** (0.025)	0.043* (0.028)
N. obs	3,389	5,553	4,303	4,115	4,962	3,485
Pre-lockdown IPV	0.201	0.186	0.190	0.194	0.194	0.193
Age and date controls	Yes	Yes	Yes	Yes	Yes	Yes
Demographics and empl. status	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table displays the coefficients of the independent variable of interest in equation 1, expressed as percentage points difference from the value of the dependent variable before the lockdown. The dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers “sometimes” or “often” to any of 9 possible situations of abuse. The sample includes all women who declare to live with a male partner and who are 60 or younger at the time of the interview. Provinces divided according to the % of couples in each category. Separate regressions by type of province according to the specific indicator in each column. The specifications in columns (1) and (2) include a control for whether the partner of the interviewed woman is the breadwinner. The specifications in columns (3) and (4) include a control for whether the couple is a dual earner couple. Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff. Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: Online survey.

Table A.6 performs similar analyses separately for two different groups of women according to their previous exposure to IPV. Columns 1 to 3 show that the results of women with no previous exposure to IPV are robust to the various specification changes, even to constraining the value of the coefficient of past IPV to 1. Instead, the results of women with previous exposure to IPV are not robust to the constrained regression.³¹ In other words, the lack of a robust effect in column 6 of Table A.5 is due to the fact that the pandemic has resulted in both an increase but also a decrease of IPV among women that prior to the lockdown were experiencing IPV.

5. Conclusions

Domestic violence is a global public health problem and human rights violation with high economic and social costs.³² Using a

³¹ Note that in Table A.6 the constrained LPM with separate regressions yields the same results as the unconstrained ones, since in each of those regressions past IPV takes a constant value and drops from the regression.

³² The direct costs of intimate partner violence against women exceeded an estimated \$3.6 trillion (2014 U.S. dollars) in the U.S. and 226 billion euros annually in the European Union (Florence et al., 2018; Jourová, 2016)

unique data at individual level, which includes both reported and unreported events of IPV, we find that as consequence of the Covid-19 pandemic, the incidence of IPV increases 23.38% during the 3 months of lockdown in Spain. This effect is bigger than recent estimates based on reported events, which highlights the importance of taking into account unreported events.³³

We also show that during the extreme circumstances of a pandemic, IPV increases due to two independent factors: the lockdown and the economic stress. Although we cannot rule out that other factors (such as stress due to health concerns or working under pressure in essential occupations) may also explain the increase in IPV, our findings unveil one unintended consequence of lockdowns, i.e., that a lockdown, *per se* and independent from economic stress, causes more violence against women. Specifically, forced cohabitation increases psychological violence, that is, the type of violence less likely to be reported to the police.

Finally, our findings suggest that the end of the lockdown will not necessarily translate into a rapid decrease of IPV. By contrast,

³³ For example, Leslie and Wilson (2020) find an increase of 7.5% during the 12 weeks after the implementation of social distancing measures in US.

Table 4
The impact of the lockdown on non-extreme violence. Subgroup analysis.

	By presence of children in the household		By age of the woman			By the level of education of the woman	
	No child (1)	Child (2)	30 or less (3)	31–50 (4)	51–60 (5)	Less than college (6)	College or more (7)
Man only locked	0.013 (0.029)	0.029 (0.027)	0.025 (0.048)	0.027 (0.031)	0.027 (0.032)	0.065** (0.031)	–0.036 (0.025)
Woman only locked	–0.022 (0.020)	0.019 (0.020)	–0.005 (0.033)	0.010 (0.023)	0.010 (0.025)	0.007 (0.021)	–0.001 (0.023)
Both locked	0.004 (0.021)	0.036* (0.021)	0.055* (0.032)	0.022 (0.024)	0.010 (0.023)	0.033 (0.023)	0.014 (0.023)
Man only economic stress	–0.028 (0.020)	0.039** (0.019)	–0.041 (0.033)	0.022 (0.022)	0.038* (0.020)	0.036* (0.019)	0.008 (0.023)
Woman only economic stress	0.008 (0.021)	0.014 (0.021)	–0.030 (0.029)	0.015 (0.025)	0.048* (0.025)	0.020 (0.021)	0.008 (0.024)
Both economic stress	0.048** (0.022)	0.071*** (0.024)	0.002 (0.033)	0.077*** (0.025)	0.078** (0.034)	0.065*** (0.024)	0.063** (0.026)
N. obs	3,266	5,681	2,314	4,724	1,831	6,896	1,984
Pre-lockdown IPV	0.146	0.210	0.176	0.206	0.171	0.203	0.177
Age and date controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics and empl. status	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: The table displays the coefficients of the independent variable of interest in equation 1, expressed as percentage points difference from the value of the dependent variable before the lockdown. The dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers “sometimes” or “often” to any of 9 possible situations of abuse. The sample includes all women who declare to live with a male partner and who are 60 or younger at the time of the interview. Columns (1) to (7) display the results of estimating separate regressions for each of the subgroups. All models control for the level of abuse before the lockdown. Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff (ERTE). Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: Online survey.

as the economic consequences of the Covid-19 pandemic becomes more evident, the incidence of IPV may increase for this reason. This is particularly worrisome given that we find that economic stress increases most types of abuse. Special attention should be devoted to couples without previous levels of violence, with children and of a low socio-economic status, since these are the couples where we see the largest effects.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Additional tables and figures

See [Tables A1–A8](#) and [Figs. A1–A3](#).

Table A.1
Measures of technical abuse.

Indicator of abuse	Type of abuse	
He decides what you can and cannot do	Psychological abuse	
He takes the money you earn or does not give you what you need		
He prevents you from seeing your family or relating to friends and neighbours		
He tells you that you are not capable of anything		
He insults you or make you feel bad with yourself	Sexual abuse	
He insists on having sex even when he knows you don't want to		
He frightens you		Physical abuse
He pushes or hits you		
He threatens you		

Table A.2
National Representative Labour Force Survey compared with IPV Survey.

	LFS-2020	IPV survey sample			LFS-2020	IPV survey sample	
		Unweighted	Weighted			Unweighted	Weighted
Panel A: Demographic characteristics							
High Educated	0.40	0.39	0.42				
Age Interval	35–39	31–35	35–39				
Married	0.49	0.46	0.52				
With Children	0.59	0.56	0.63				
Panel B: Women distribution across provinces							
Province				Province			
Alava	0.0065	0.0038	0.0063	Asturias	0.0201	0.041	0.0199
Albacete	0.0082	0.0085	0.008	Palencia	0.003	0.0048	0.003
Alicante	0.0387	0.0362	0.0374	Palmas (las)	0.0266	0.0254	0.0262
Almeria	0.0158	0.0126	0.0155	Pontevedra	0.0193	0.0281	0.019
Avila	0.0031	0.0056	0.003	Salamanca	0.0063	0.0118	0.0061
Badajoz	0.0139	0.0179	0.0133	Tenerife	0.0247	0.0272	0.0259
Baleares	0.0271	0.0265	0.0267	Cantabria	0.0118	0.014	0.0116
Barcelona	0.1191	0.0702	0.1248	Segovia	0.0031	0.004	0.003
Burgos	0.0069	0.0084	0.0069	Sevilla	0.0424	0.0579	0.0445
Caceres	0.008	0.0104	0.0078	Soria	0.0017	0.0029	0.0013
Cadiz	0.0267	0.0362	0.028	Tarragona	0.017	0.011	0.0168
Castellon	0.0124	0.0096	0.0117	Teruel	0.0026	0.0036	0.0024
Ciudad real	0.0102	0.0124	0.0099	Toledo	0.0143	0.0166	0.0139
Cordoba	0.0165	0.0263	0.016	Valencia	0.0542	0.0461	0.0532
Coruna (la)	0.0229	0.0377	0.0227	Valladolid	0.0104	0.0183	0.0103
Cuenca	0.0041	0.0047	0.0038	Vizcaya	0.0234	0.0141	0.0231
Girona	0.0163	0.0107	0.0157	Zamora	0.0031	0.0043	0.003
Granada	0.0197	0.0259	0.0194	Zaragoza	0.0199	0.0216	0.0195
Guadalajara	0.0056	0.0058	0.0054	Ceuta	0.0017	0.0024	0.0014
Guipuzcoa	0.0141	0.0076	0.0136	Melilla	0.0019	0.0013	0.0008
Huelva	0.0112	0.0141	0.0106				
Huesca	0.0043	0.0036	0.0039				
Jaen	0.0129	0.0147	0.0124				
Leon	0.0088	0.018	0.0086				
Lleida	0.009	0.0042	0.0081				
Rioja (la)	0.0065	0.008	0.0065				
Lugo	0.0062	0.0092	0.0062				
Madrid	0.1497	0.1125	0.1569				
Malaga	0.037	0.0373	0.0362				
Murcia	0.0322	0.0265	0.0312				
Navarra	0.0135	0.0084	0.0131				
Orense	0.0056	0.01	0.0055				

Note: Sample means of women aged between 18 and 60 years old. Own calculations using our online survey and the Spanish Labor Force Survey (LFS). The Spanish LFS is a continuous on a quarterly basis survey aimed to investigate the socioeconomic characteristics of the population living in family dwellings. The survey only excludes populations lacking a family dwelling, which only represents 0.9% of the total population according to 2011 Census.

Table A.3
Definition of key variables.

IPV during lockdown	Dummy variable 1-if woman answers "sometimes" or "often" to any of 9 possible situations of abuse during the lockdown 0-Otherwise
Man only locked (ML)	Dummy variable 1- if the partner is either at home unemployed or working from home. 0-Otherwise
Woman only locked (WL)	Dummy variable 1- if the woman is either at home unemployed or working from home. 0-Otherwise
Both locked (ML)	Dummy variable 1- if the both are either at home unemployed or working from home. 0-Otherwise
Man only economic stress	Dummy variable 1- if the partner has either lost the job or clients due to the COVID pandemic, fears losing his job in the next months, or is affected by a temporary layoff 0-Otherwise
Women only economic stress	Dummy variable 1- if woman has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff 0-Otherwise
Both economic stress	Dummy variable 1- if woman and her partner have either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff 0-Otherwise
IPV before lockdown	Dummy variable 1-if woman answers "sometimes" or "often" to any of 9 possible situations of abuse before the lockdown 0-Otherwise

Table A.4
Correlation coefficients of the variables of interest and covariates.

	Man only locked	Woman only locked	Both locked	Man only economic stress	Woman only economic stress	Both economic stress	College degree or more (woman)	College degree or more (man)	Employed before the lockdown (woman)	Employed before the lockdown (man)	Age of the woman
Man only locked	1										
Woman only locked	-0.2209	1									
Both locked	-0.286	-0.6357	1								
Man only economic stress	0.0853	-0.019	0.0137	1							
Woman only economic stress	-0.0403	0.1576	-0.1135	-0.253	1						
Both economic stress	-0.0181	-0.1498	0.1647	-0.2827	-0.3001	1					
College degree or more (woman)	-0.0264	-0.0674	0.1109	-0.0176	0.0063	-0.0422	1				
College degree or more (man)	-0.0052	-0.1456	0.1824	-0.0596	0.0105	-0.0526	0.3755	1			
Employed before the lockdown (woman)	0.168	-0.1737	-0.07	-0.2563	0.2467	0.2832	0.1429	0.0452	1		
Employed before the lockdown (man)	-0.0825	0.2232	-0.2439	0.135	-0.0695	0.1285	0.0261	0.027	0.1018	1	
Age of the woman	0.0379	-0.0675	0.024	-0.0083	-0.0931	-0.1324	-0.0544	0.0017	-0.0551	-0.0673	1

Table A.5
The impact of the lockdown on non-extreme violence (robustness tests to specification changes).

	Baseline specification (dep. var: IPV after)					Constrained specification (difference of IPV as dependent variable)					
				+ Controls for the intensity and type of abuse before the lockdown		Dep. var: IPV after – IPV before		Dep. var: # of abuses after – # of abuses before		Dep. var: frequent' IPV after – 'frequent' IPV before	
	Probit (1)	Probit (2)	LPM (3)	Probit (4)	LPM (5)	LPM (6)	LPM (7)	LPM (8)	LPM (9)	LPM (10)	LPM (11)
Man only locked	0.026 (0.022)		0.015 (0.015)	0.031 (0.025)	0.016 (0.014)	0.005 (0.016)		0.018 (0.033)		0.002 (0.020)	
Woman only locked	0.009 (0.016)		0.006 (0.011)	0.009 (0.017)	0.005 (0.011)	–0.000 (0.012)		–0.019 (0.028)		–0.008 (0.015)	
Both locked	0.028 (0.017)		0.020* (0.011)	0.031* (0.018)	0.019* (0.011)	0.013 (0.012)		0.020 (0.029)		0.015 (0.015)	
Man only economic stress	0.022 (0.015)		0.013 (0.011)	0.017 (0.016)	0.009 (0.011)	–0.005 (0.011)		–0.031 (0.026)		–0.011 (0.015)	
Woman only economic stress	0.013 (0.017)		0.004 (0.012)	0.013 (0.018)	0.003 (0.012)	–0.009 (0.013)		–0.003 (0.024)		–0.009 (0.015)	
Both economic stress	0.064*** (0.018)		0.038*** (0.013)	0.060*** (0.020)	0.035*** (0.013)	0.009 (0.014)		0.013 (0.031)		0.011 (0.017)	
Man only locked and eco stress		0.072** (0.038)					0.042** (0.023)		0.071* (0.038)		0.047 (0.035)
Woman only locked and eco stress		–0.017 (0.017)					–0.012 (0.015)		–0.017 (0.026)		–0.017 (0.017)
Both locked and eco stress		0.050*** (0.018)					0.027** (0.013)		0.057** (0.029)		0.034** (0.015)
N. obs	8,950	8,950	8,950	8,950	8,950	8,950	8,950	8,950	8,950	8,950	8,950
Pre-lockdown IPV	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192	0.192
Age and date controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Demographics and empl. status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Effects of the independent variable of interest in Probit (columns 1, 2 and 4) and Linear regressions (the rest of columns), expressed as percentage points difference from the value of the dependent variable before the lockdown. The sample includes all women who declare to live with a male partner and who are 60 or younger at the time of the interview. In columns 1 to 5 the dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers “sometimes” or “often” to any of 9 possible situations of abuse. In columns 6 and 7 the dependent variable is the difference in the previous binary indicator of abuse. In columns 8 and 9 the dependent variable is the difference in the number of abusive behaviours that the woman was subject, where the number of abuses ranges from 0 to 9. Finally, in columns 10 and 11 the dependent variable is the difference in the indicator variable taking value 1 if the woman is/was subject to any of the nine types of abuse and value 2 if that abuse happens ‘often’. All models in columns 1 to 5 control for the level of abuse before the lockdown. In addition to these controls, columns 4 and 5 include a measure of the intensity of past IPV (a dummy taking 2 if the woman answered ‘often’ to any of the nine types of abusive behaviour) and a set of dummy indicators for the different types of lagged IPV (whether this was physical, sexual, or psychological). Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff (ERTE). Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: Online survey.

Table A.6

The impact of the lockdown on non-extreme violence: with versus without previous exposure to IPV (robustness tests to specification changes).

	Without previous exposure to IPV (IPV before = 0)			With previous exposure to IPV (IPV before = 1)				
	Separate reg. Probit (1)	Separate reg. LPM (2)	Full-sample Spec. with interactions. Constrained LPM (3)	Separate reg. Probit (4)	Separate reg. LPM (5)	Full-sample Spec. with interactions. Constrained LPM (6)	Separate reg. Probit + controls for intensity and type of IPV before lockdown (7)	Separate reg. LPM + controls for intensity and type of IPV before lockdown (8)
Man only locked	0.018 (0.013)	0.014 (0.013)	0.050*** (0.014)	0.019 (0.050)	0.015 (0.054)	-0.163*** (0.042)	0.034 (0.043)	0.020 (0.054)
Woman only locked	0.003 (0.010)	0.002 (0.010)	0.039*** (0.011)	0.026 (0.038)	0.024 (0.041)	-0.164*** (0.026)	0.027 (0.036)	0.021 (0.041)
Both locked	0.010 (0.010)	0.010 (0.010)	0.050*** (0.011)	0.052 (0.041)	0.054 (0.044)	-0.143*** (0.025)	0.061 (0.040)	0.053 (0.044)
Man only economic stress	0.008 (0.009)	0.007 (0.010)	0.018* (0.011)	0.047 (0.034)	0.043 (0.035)	-0.024 (0.031)	0.035 (0.031)	0.029 (0.034)
Woman only economic stress	0.015 (0.010)	0.012 (0.011)	0.027** (0.011)	-0.012 (0.039)	-0.018 (0.042)	-0.104*** (0.033)	-0.011 (0.037)	-0.021 (0.041)
Both economic stress	0.037*** (0.011)	0.035*** (0.013)	0.051*** (0.013)	0.067* (0.036)	0.061* (0.037)	-0.031 (0.028)	0.053 (0.033)	0.051 (0.037)
N. obs	7,254	7,254	8,950	1,697	1,697	8,950	1,697	1,697
Pre-lockdown IPV	0.000	0.000	0.192	1.000	1.000	0.192	1.000	1.000
Age and date controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
demographics and empl. status	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Effects of the independent variable of interest in Probit (columns 1, 4 and 7) and Linear regressions (the rest of columns), expressed as percentage points difference from the value of the dependent variable before the lockdown. Columns 1 to 3: sample restricted to women with no previous exposure to domestic violence. Columns 4 to 8: sample restricted to women with positive previous exposure to domestic violence. Columns 3 and 6: full sample with the six lockdown and economic stress indicators interacted with the dummy for past IPV. The sample includes all women who declare to live with a male partner and who are 60 or younger at the time of the interview. The dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers "sometimes" or "often" to any of 9 possible situations of abuse. All models control for the level of abuse before the lockdown, the coefficient of which is constrained to 1 in columns 3 and 6. In addition to these controls, columns 7 and 8 include a measure of the intensity of past IPV (a dummy taking 2 if the woman answered 'often' to any of the nine types of abusive behaviour) and a set of dummy indicators for the different types of lagged IPV (whether this was physical, sexual, or psychological). Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff (ERTE). Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: Online survey.

Table A.7
The impact of the lockdown on non-extreme violence by type of abuse.

	Physical			Sexual			Psychological		
	Full sample (1)	No previous exposure (IPV before = 0) (2)	With previous exposure (IPV before = 1) (3)	Full sample (4)	No previous exposure (IPV before = 0) (5)	With previous exposure (IPV before = 1) (6)	Full sample (7)	No previous exposure (IPV before = 0) (8)	With previous exposure (IPV before = 1) (9)
Man only locked	-0.001 (0.002)	-0.001 (0.002)	0.001 (0.008)	-0.003 (0.004)	-0.004 (0.004)	0.008 (0.022)	0.041* (0.022)	0.044* (0.029)	0.039 (0.044)
Woman only locked	-0.003 (0.002)	-0.002 (0.002)	-0.004 (0.002)	-0.003 (0.004)	-0.004 (0.004)	-0.004 (0.008)	0.017 (0.016)	0.021 (0.021)	0.010 (0.028)
Both locked	-0.002 (0.002)	-0.003 (0.002)	0.001 (0.006)	-0.004 (0.004)	-0.005 (0.0059)	0.006 (0.016)	0.035** (0.016)	0.041** (0.020)	0.025 (0.030)
Man only economic stress	0.001 (0.002)	0.004 (0.004)	-0.004 (0.002)	0.014*** (0.006)	0.017*** (0.007)	-0.003 (0.008)	0.022 (0.015)	0.020 (0.018)	0.025 (0.027)
Woman only economic stress	-0.000 (0.002)	0.001 (0.003)	-0.004 (0.002)	0.011** (0.006)	0.011** (0.006)	0.014 (0.020)	0.019 (0.017)	0.034* (0.021)	-0.007 (0.023)
Both economic stress	0.004 (0.003)	0.006* (0.004)	-0.002 (0.004)	0.021*** (0.007)	0.021*** (0.008)	0.022 (0.022)	0.061*** (0.018)	0.080*** (0.023)	0.024 (0.026)
N. obs	8,950	8,950		8,950		8,950	8,950		8,950
Pre-lockdown IPV	0.040	0	1	0.026	0	1	0.185	0	1
Age and date controls	Yes	Yes		Yes		Yes	Yes		Yes
Demographics and empl. status	Yes	Yes		Yes		Yes	Yes		Yes
Province fixed effects	Yes	Yes		Yes		Yes	Yes		Yes

Notes: Effects of the independent variable of interest in Probit regressions, expressed as percentage points difference from the value of the dependent variable before the lockdown. Columns 2–3, 5–6 and 8–9 show the results of joint regressions with the six treatment variables interacted with the indicator of past exposure to each type of abuse. The sample includes all women who declare to live with a male partner and who are 60 or younger at the time of the interview. The dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers “sometimes” or “often” to any of the possible situations of abuse within each type. All models control for the level of abuse before the lockdown. Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff (ERTE). Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: Online survey.

Table A.8

The impact of the lockdown on non-extreme violence (robustness test to alternative measures of economic stress).

	All types of IPV		Physical or sexual		Psychological	
	Eco stress as expectation of losing job (1)	Eco stress as having lost job or income (2)	Eco stress as expectation of losing job (3)	Eco stress as having lost job or income (4)	Eco stress as expectation of losing job (5)	Eco stress as having lost job or income (6)
Man only locked	0.026 (0.024)		−0.003 (0.005)		0.041* (0.024)	
Woman only locked	0.007 (0.017)		−0.009* (0.004)		0.015 (0.016)	
Both locked	0.025 (0.017)		−0.007 (0.005)		0.033** (0.017)	
Man only economic stress	0.023* (0.015)	0.016 (0.018)	0.016*** (0.007)	0.005 (0.007)	0.027* (0.014)	0.021 (0.018)
Woman only economic stress	0.001 (0.014)	0.029 (0.022)	0.005 (0.005)	0.006 (0.007)	0.005 (0.014)	0.030 (0.021)
Both economic stress	0.055*** (0.019)	0.055** (0.027)	0.007 (0.006)	0.023** (0.014)	0.056*** (0.019)	0.056** (0.027)
N. obs	8,950		8,950		8,950	
Pre-lockdown IPV	0.192		0.056		0.185	
Age and date controls	Yes		Yes		Yes	
Demographics and empl. status	Yes		Yes		Yes	
Province fixed effects	Yes		Yes		Yes	

Notes: Effects of the independent variable of interest in Probit regressions, expressed as percentage points difference from the value of the dependent variable before the lockdown. The dependent variable is a binary variable indicating whether the woman was subject to abuse, where the variable takes value 1 if the woman answers “sometimes” or “often” to any of the possible situations of abuse within each type. All models control for the level of abuse before the lockdown. Date controls are dummies indicating the day when the survey was completed. Demographics: level of education of the man and of the woman, immigrant origin of the man and of the woman, presence of children younger than 18 in the household, years with the current partner, marital status and household income level; employment status: a dummy variable that indicates whether the individual is working at the time of the survey and another dummy to indicate whether the individual was working before the lockdown; locked is a dummy variable that takes value 1 if the individual is either at home unemployed or working from home. Economic stress is a dummy that takes value 1 if the individual has either lost the job or clients due to the COVID pandemic, expresses fears to lose his/her job in the next months, or is affected by a temporary layoff (ERTE). Robust standard errors in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Source: Online survey.

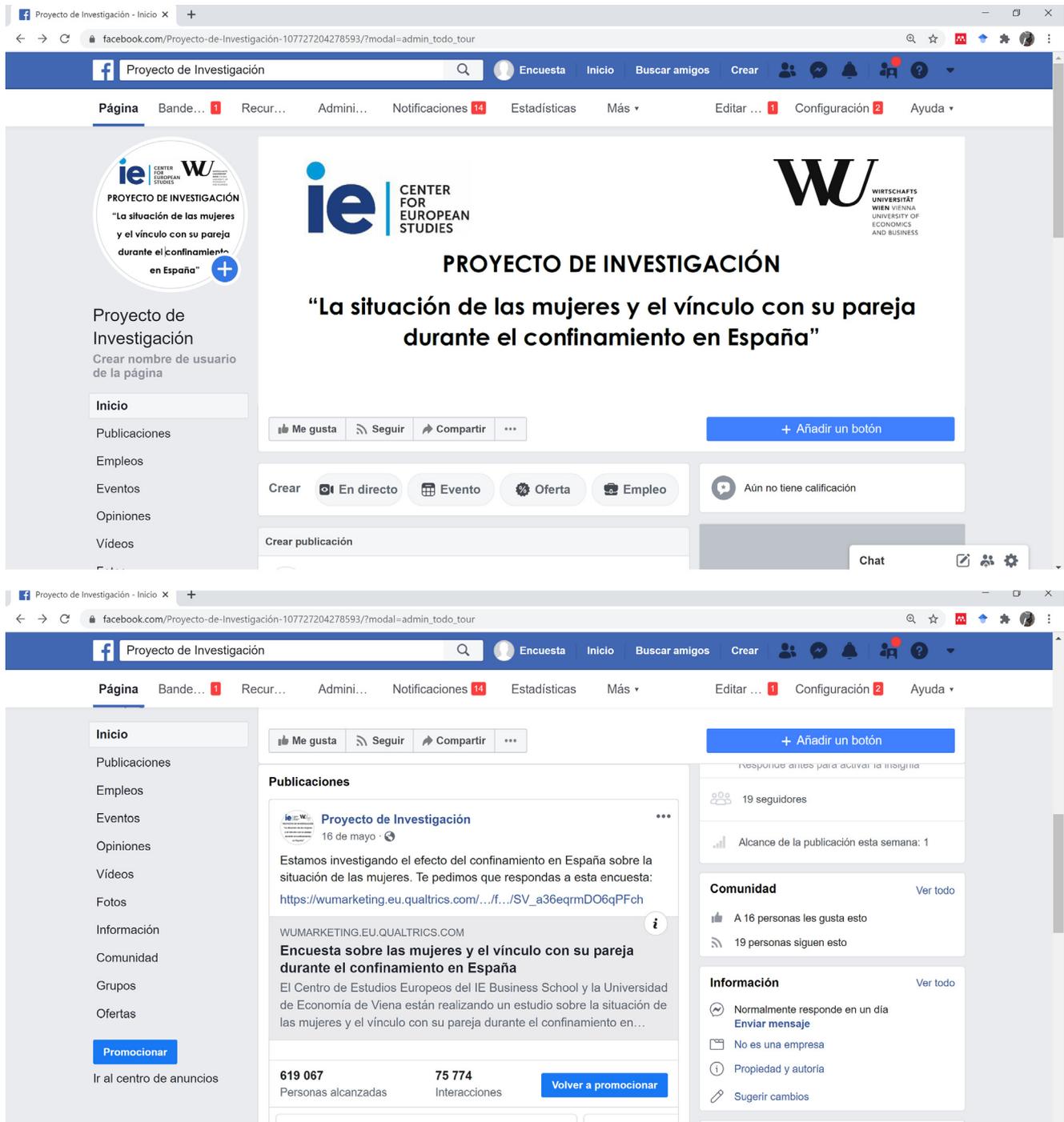


Fig. A1. Facebook's page and boosted post with the link to the survey.

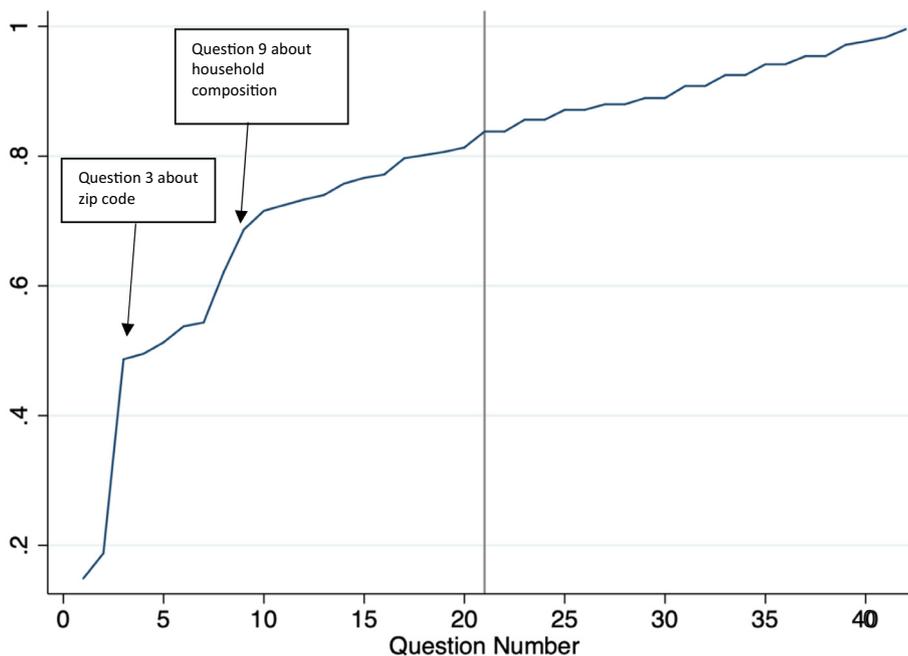


Fig. A2. Cumulative distribution function of women who left the survey by question. Notes: The vertical line refers to the first question about domestic violence. Sample: Women who did not finish the survey.

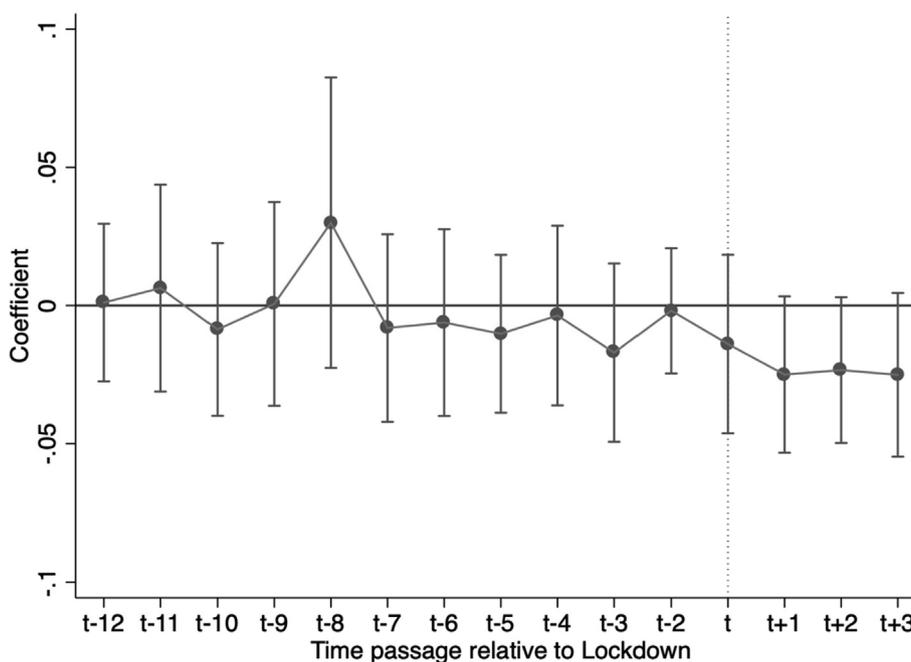


Fig. A3. Event-study coefficient plot. Note: Sample time period: January 2003 to June 2020. Period *t* represents the month when the lockdown started (March 2020). Periods prior to *t*-12 are used as reference. The model includes province, month and year FE. Standard errors are clustered at the province level.

Appendix B. The effect of the Covid-19 on female homicides by intimate partners

To assess the effect of the Covid-19 pandemic on fatal IPV, we use monthly records of female intimate partner homicides. The Government Office on Gender-based Violence informs monthly on the femicides by province and victim-perpetrator relationship (current or former partner). We use data from January 2003 to June 2020.

To test the effects of the lockdown on female homicides, we carry out an event study analysis, controlling for seasonal changes, trends and province’s characteristics.

Specifically, we estimate the following regression:

$$y_{p,m} = \sum_{m=3}^{-12} \alpha_m D_{Lm} + \gamma_p + \theta_m + \rho_y + \varepsilon_{p,m,y} \tag{2}$$

where $y_{p,m,y}$ is intimate partner homicides per 100,000 women in province *p*, month, *m* and year *y*. D_{Lm} is a dummy for *m* months prior/after the start of the lockdown (March 2020). Periods that are at least 12 months before the lockdown are used as the base group.

Fig. A3 displays the results from the event study (the lines represent robust 95 percent confidence intervals). The figure provides

suggestive evidence of a break in the trend in intimate partner homicides after the start of the lockdown. The coefficients of interest oscillate around zero until the month of the lockdown (March, 2020) and start a declining trend thereafter. At the end of the period (month + 3, June), the number of female homicides has decreased by 2.5 pp., or 113% of the mean pre-lockdown (0.022 femicides per 100,000 women). As noted earlier, the magnitude of this effect is explained by the very substantial drop in the number of intimate partner homicides between April and June, but also by the fact that this happened in a year that, up until the lockdown, was showing a relatively high number of female homicides committed by their partners or ex-partners.

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